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HEADQUARTERS
Aeronautical Chart & Information Center
Air Photographic & Charting Service (MATC)
UNITED STATES AIR FORCE
Second & Arsenal
St. Louis 18, Missouri

TOP SECRET

TCS-4118-58
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ACG

***USAF Declass/Release Instructions On File** 18 November 1958

Mr. Arthur Lundahl
Central Intelligence Agency
Stewart Motor Building
N. W. 5th and K. Streets
Washington, D. C.

Dear Mr. Lundahl:

The Aeronautical Chart and Information Center is in the process of improving position information on Air Force target products such as Missile Target Data Sheets, Geodetic Data Sheets and Target Charts. Talent photography is being exploited for this purpose. Headquarters, Air Force approval has been granted for the Aeronautical Chart and Information Center to make direct contact with the Central Intelligence Agency on matters pertaining to procurement of information from the Talent System.

Very valuable improvements of geodetic position for target products have already been realized through local extension of basic geodetic data through the media of Talent photography. However, results on many areas will fail to meet accuracy requirements unless more knowledge of the characteristics of the cameras utilized in the existing missions is obtained. The following needs to be accomplished in regard to camera information.

a. Interlock angles of the taking cameras would be extremely valuable, were they available. Since it is understood that the majority of the original camera configurations have either been disassembled or rearranged, any effort expended toward interlock angles will need to be concentrated into two areas.

(1) Reconstruction of interlock through the use of geometric measurements from the photography previously procured from the configurations. This method lacks the desired accuracy but must suffice since it is the only known method of retrieving the data. ACIC will undertake these computations where the information is required.

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(2) Establish test ranges to be used in connection with existing or future configurations to provide a lock of the photograph from each camera to known ground control. ACIC would be willing to participate in the establishment of such geodetic ranges.

b. Camera calibration data on individual cameras is essential for full exploitation of information available on existing photography. This data can be classified into two areas.

(1) Minimum essential camera data required.

(a) Equivalent focal length.

(b) Collimation marker separation measurements.

(c) Gross distortion characteristics including those caused by the lack of flatness of the platen.

(2) Camera data required for precision exploitation.

(a) Calibrated focal length.

(b) Collimation separation measurements.

(c) Radial distortion in reference to the calibrated focal length.

(d) Tangential distortion.

(e) Error in indicated position of the principal point.

(f) Location of the point of symmetry.

(g) Measurement of the flatness of the camera platen.

ACIC will participate in obtaining and reducing information in either or both of the above requirements.

The effectiveness of the Air Force is largely dependent upon the ability to hit targets with manned bombing systems and missiles. To

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have on hand materials which will greatly enhance the ability to hit targets and not fully exploit such materials for accurate positioning would be gross negligence. This Center must take every feasible step to provide accurate information to the Air Force. Since the equipment used to procure the photography is under the immediate control of the Central Intelligence Agency, we consider it most urgent to have a program established which will provide camera data or make the equipment available for appropriate measurements.

It is essential to ACIC that a cooperative program to obtain camera data be established at the earliest possible date. Please let us know as soon as possible how such a program can be arranged.

Sincerely yours,

ROBERT E. HERNDON, JR.
Colonel, USAF
Commander

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